



INDIRANI COLLEGE OF NURSING

CONGESTIVE HEART FAILURE

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DEFINITION:

CHF is an abnormal condition involving impaired cardiac pumping is to inadequate supply of O₂ rich bloods to the body.

The term of CHF is most commonly use when referring,

- I. Right sided Heart Failure.
- II. Left sided Heart Failure.

INCIDENCE:

Currently about 5 million people in the United States have CHF. The American heart association estimates 47, 0000 new cases are diagnosed each year. Approximately 1 in every 100 older adults has CHF.Older than 65yrs. The incidence of Heart Failure is similar in men and women.

ETIOLOGY:

Common causes of Heart Failure

CHRONIC

Coronary artery disease (CAD)

Hypertensive heart disease

Rheumatic heart disease

Congenital heart disease

Cor.pulmonale

Anemia


Bacterial endocarditis

Valvular disorders


RISK FACTORS:

 Hypertension

 DM

 Smoking


 Obesity


 High sr. cholesterol


PRECIPITATING CAUSES OF CHF:


Increase the workload of the ventricles, causing a decompensate condition that leads to decreased myocardial function


 Anemia


 Infection

 Thyrotoxicosis


 Hypothyroidism

 Arrhythmias

 Bacterial endocarditic

 Pulmonary embolism

 Pulmonary disease

 Paget's disease

 Nutritional deficiencies

 Hypervolemia

CLASSIFICATION: [NEW YORK HEART ASSOCIATION]

CLASS: I

ACUTE

Acute myocardial infarction

Arrhythmias

Pulmonary emboli

Thyrotoxicosis; Hypertensive crisis

Ruptured of papillary muscle

Ventricular septal defect

Myocarditis

No limitation of physical activity.

Ordinary physical activity does not cause fatigue, dyspnea, palpitations or angina pain.

CLASS: II

Slight limitation of physical activity.

No symptoms at rest

Ordinary physical activity results in fatigue, dyspnea, palpitations or anginal pain.

CLASS: III

Marked limitation of physical activity

Usually comfortable rest

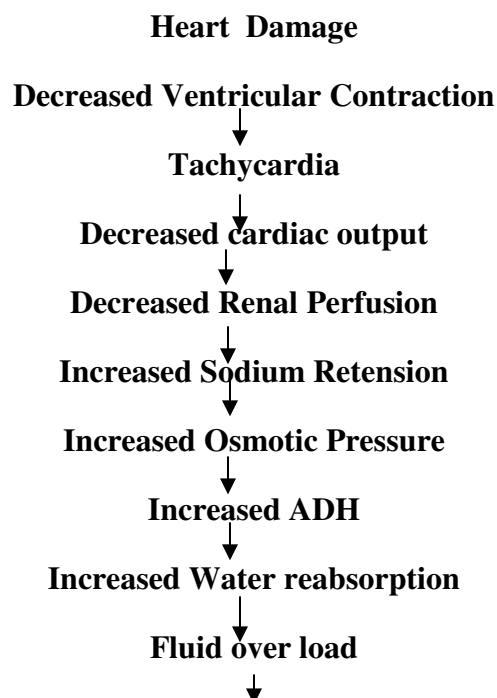
Ordinary physical activity causes fatigue, dyspnea, palpitations or angina pain.

CLASS: IV

Inability to carry on any physical activity without discomfort.

Symptoms of cardiac insufficiency or of angina may be present even at rest. If any physical activity is undertaken, discomfort is increased.

PATHOPHYSIOLOGY:



Edema

PATHOLOGY OF VENTRICULAR FAILURE:

Systolic failure:

- ✚ Defect in the ability of the ventricles pump blood. The left ventricle loses its ability to generate enough pressure to eject blood forward through the high pressure aorta.
- ✚ Ejection fraction- the fraction of total ventricular filling volume that is ejected during each ventricular contraction.
- ✚ **Causes-** impaired contractile function MI, increased after load [HT]; cardiomyopathy. Mechanical abnormalities [valvular heart diseases].

Diastolic failure:

- ✚ Impaired ability of the ventricles to filling during diastole decreased DF result in decreased stroke volume.
- ✚ It is character by high filling pressure and resultant venous engorgement in both the pulmonary and systemic vascular resultant.

Mixed systolic and diastolic failure:

Both ventricles may be dilated and have poor filling and emptying capacity.

Eg: dilated cardiomyo pathy.

Patient with ventricular failure of any type the patient having low systemic arterial BP; low cardiac output; poor renal perfusion; poor exercise tolerance; ventricular arrhythmias.

CLINICAL MANAIFESTATION:

1. Respiratory symptoms:

- ✚ Dyspnea
- ✚ Orthopnea
- ✚ Paroxysmal nocturnal Dyspnea
- ✚ Persistent hacking cough
- ✚ Alternating periods of apnea and hyper apnea; rales [crackles].

2. Cardiovascular symptoms:

- ✚ Angina

- ✚ Jugular vein distention
- ✚ Tachycardia
- ✚ Decreased systolic BP with decreased diastolic BP

3. *Gastro intestinal symptoms:*

- ✚ Enlargement and tenderness in the Right upper quadrant of abdomen
- ✚ Ascitis; nausea, vomiting, bloating, anorexia; epigastric pain.

4. *Cerebral symptoms:*

- ✚ Altered mental status [confusion, restlessness].

5. *Generalized symptoms:*

- ✚ Fatigue: decreased in activity intolerance
- ✚ Edema: weight gain

6. *Psychosocial:*

- ✚ Anxiety

7. *Renal symptoms:*

- ✚ Oliguria and decreased frequency during the day
- ✚ Nocturia

RIGHT SIEDED HEART FAILURE

Signs:

- Murmurs
- Jugular veins distension
- Edema(e.g anterior tibias, medial malleoli,scrotum,sacrum)
- Weight gain
- Anasarca (massive generalized edema)
- Hepatomegaly

Symptoms:

- Fatigue
- Anxiety; Depression

LEFT SIEDED HEART FAILURE

Signs:

- Pulsus alternans
- Increased heart rate
- Crackles(pulmonary edema)
- Pleural effusion
- Changes in mental status
- Restlessness, confusion

Symptoms:

- Weakness
- Anxiety

- Right upper quadrant pain
- Anorexia and GI bloating
- nausea
- Depression;dyspnea
- Orthopnea (shortness of breath in recumbent position)
- Dry, hacking cough
- Nocturia
- Frothy ,pink –tinged sputum (advanced pulmonary edema)

DIAGNOSTIC EVALUATION:

- ✚ History Collection
- ✚ Physical examinations
- ✚ ECG; Echocardiogram
- ✚ Chest x- ray
- ✚ Exercise test [stress test]
- ✚ Angiogram
- ✚ Radionuclide ventriculo graphy
- ✚ Electrophysiology [EP] study
- ✚ CT; MRI
- ✚ Blood test for brain natriuretic peptide [BNP] or N-terminal pro BNP C test that measure production of the hormone found in the left ventricle.

MANAGEMENT:

- ✚ High fowler's position
- ✚ O₂ by mask or nasal catheter.
- ✚ Rest
- ✚ Treatment of underlying causes
- ✚ Cardiac monitor and oximetry.

PHARMACOLOGICAL MANAGEMENT:

First-Line Treatment

- Digitalis - increase ventricular contractility
- Slow conduction of impulses through the atrioventricular node and Purkinje

- Increase ventricular emptying and capacity of heart to work
- Increase cardiac output
- ***Nitroglycerine***
 - Ameliorates coronary artery perfusion
 - Systolic BP should be more than 90-100 mm Hg
 - 0.4 mg SL q 5 min
 - Decreases preload/afterload
 - Nitrate therapy earlier to IV is initiated
- ***Furosemide***
 - Diuresis leads to reduced intravascular volume
 - Direct vasodilation contributes to reduced venous return
 - 40 mg (0.5-1 mg/kg) slow IV . May cause dysrhythmias, hypokalaemia
 - . May worsen hypotension in right ventricular failure (RVF)

Morphine sulphate

- 2 mg IV: push slowly q 10-15 min
- Decreased venous return contributes to
- Decreased O₂ demand Reduced cardiac work
- Reduced anxiety
- Decreased discharge of catecholamines
- Supervise BP and ventilations Systolic BP should be more than 90-100 mm Hg.

Second-Line Drug Therapy

Dobutamine

- **Potent B stimulation**
 - Grows the level of cardiac output
 - Raises contractility
- Drug of choice if systolic BP is more than 100 and diastolic BP is less than 110
- 2-20 mcg/kg/min

Nitroglycerine

- 10 mcg/min increased by 5-10 mcg/min q 5 min
- Vasodilation

Bronchodilators (beta agonists)

Explain the long-term management:

- Long-term management comprises the following:
- Diet restrictions
- Diuretics (+ Potassium if nonpotassium sparing)
- Minimization of fluid
- Blood pressure control
Angiotensin converting enzyme (ACE)
- Increase contractility
Digitalis
- Coronary artery perfusion
Nitroglycerine





SURGICAL MANAGEMENT:

- ✚ Coronary angioplasty
- ✚ Coronary artery bypass surgery
- ✚ Implantable cardiac defibrillators
- ✚ Intra -aortic balloon pump
- ✚ Left ventricular assist device
- ✚ Valve repair or valve replacement surgery
- ✚ Heart transplantation
- ✚ Pacemaker insertion
- ✚ Cardiac resynchronization therapy.

LIFE STYLE MODIFICATION:

1. Modify daily activities and get enough rest to avoid stressing the heart.
2. Eat a heart healthy diet that is low in sodium; fat.
3. Don't smoke and avoid exposure to second hand smoke.
4. Don't drink alcohol.
5. Lose weight; weight yourself daily for a sudden increased may signal fluid buildup.
6. Avoid or limit caffeine intake.
7. Regular exercise.
8. Reduce stressful events.
9. Have regular checkups to monitor the condition.

COMPLICATION:

-  Pleural effusion
-  Arrhythmias
-  Left ventricular thrombus
-  Hepatomegaly

REFERENCE:

- LIZY SONIA (Volume I) Medical surgical nursing, Elsevier Publication, 7th edition
volume 1 p:373 – 382.